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ABSTRACT

This study investigated the effect of parent involvement on the academic achievement of middle school students and examined the role of parent and student gender in that relationship. The study also explored the effects of out-of-school activities on eighth-grade students' academic achievement. Data were derived from the National Educational Longitudinal Study of 1988 and analyzed using nine educational productivity factors to account for multiple influences on increased learning. The results suggest that a number of factors drawn from the educational productivity model significantly affected student achievement, including student gender, parental contact, parental expeccations, out-of-school instruction, and parental satisfaction. Findings also indicated that fathers and mothers contribute significantly different factors to male and female students' academic performance, but that parental involvement--by fathers and mothers--is indeed important for student success. Contains 42 references. (JPB)

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Parent Involvement Gender Effects on Preadolescent Student Performance

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Introduction

In the first 18 years of life, students spend 87% of their waking time outside of school under the supervision of their parents. How parents direct this large investment of time for their children can reap considerable benefits for students' academic performance. If more of the out-of-school time were spent in academically stimulating conditions, then the amount of students' total learning time would be raised dramatically (Walberg, 1983). As reported in previous studies, parental beliefs and attitudes about schooling have the potential to wield great influence in their children's academic lives (Eccles and Harrold, 1996; Zill and Nord, 1994; Epstein, 1990). Thus, the environment of the home becomes a powerful influence on out-of-school factors and may have direct influence on in-school activities.

The importance of the home environment, as well as the importance of parents in the education of their children has been documented by numerous studies and is not a new concept. Parents have always been involved in the education of their children, but that involvement has changed over time (Berger, 1991), because of major changes in our society. At current rates, about one-third of all American children will see the dissolution of their parents' marriage. These changes in recent national family trends affect how parents interact with schools, bode ill for youth, and provide a significant reason for strengthening home-school ties (Wallace and Walberg, 1993). One effect of major, current, societal changes is that the concept of what constitutes the "typical" family has changed.

No longer is the typical family composed of a working dad and a stay-at-home mom. Economic downturns and the growth of broader career opportunities for women, have resulted in many more families with both parents in the work force. As a result, the roles of fathers have changed and sometimes increased in terms of involvement with their children.

It was not until the 1970s that the role of nurturing father was emphasized (Lamb, 1987). Lamb (1976) found that fathers who took their roles seriously and showed warmth in their relationships with both daughters and sons promoted their children's development. As this trend continues, more research must be done to assess the effect that parental gender (i.e. mothers and fathers) has on student performance. Relatively few studies have examined the individual contributions each parent has had on male

and female student achievement. Most parent involvement studies usually refer only to the mother as the parent involved.

Another effect, due to changes in our society, is the decreased amount of time parents have to spend at their children's schools. Educators seeking to improve the home-school connection have been challenged by the increase of working mothers and single parent households. Many parents are not able to participate in typically school centered activities for their children. Because of these changes, the way parent involvement is defined must change. Most definitions focus on educational aspirations and parental participation in various school activities (Keith & Keith, 1993). It is not just how often parents are physically in the school that defines their interest and participation in their child's education, instead involvement must define what parents, both mothers and fathers, do to promote and support their children's academic development. Traditional parent involvement has usually focused on help from parents with matters not directly related to the main business of the school - student achievement (Cutrona, 1994).

Based upon prior studies, parental involvement, has long been acknowledged as a key component of an effective school (Conners & Epstein, 1994; Baker, 1988; Epstein, 1987; National Commission for Excellence in Education, 1983). Parents should provide verbal encouragement or positive interactions regarding school work (Epstein, 1984; Marjoribanks, 1983). The way parents interact with their children may be the most important factor of all in their children's achievement (Walberg, 1981). It is an area that public education can look toward as a cost efficient method for increasing student achievement without incurring additional financial outlays. The benefits of home school connections, as reported in a study by Lareau and Benson, (1984) far outweigh the minimal costs of getting parents involved.

But certain types of involvement are unwelcomed by preadolescent or adolescent students. Best (1986) found that older students did not always appreciate, or even benefit from, their mothers' involvement in school activities. Many students felt that having their parent(s) at school inhibited their own personal and social development. Forty percent (40%) of students thought it was not important to "invite my parents to become volunteers", 22% said it was not important to "invite parents to school programs or events," and 55% said "no, don't ask my parents to go on a class trip" (Epstein and

Conners 1994). There are many types of parental involvement; finding out what type of involvement benefits older male and female students learning is important.

Further, it is unknown whether parent reports of involvement or the students' perception of parental involvement is more important for learning (Keith, 1991). What adolescents perceive as educational involvement by their parents and what their parents consider involvement to be, may differ. In a survey sponsored by the Sylvan Learning Center and the National Association of Secondary School Principals, 74% of 1,300 high school juniors and seniors interviewed in city, suburban, and rural schools in 20 states said that their parents were rarely, never or somewhat involved in their schooling. The students surveyed regarded help with homework, educational opportunities provided outside of school, and home study rules as more important levels of parental involvement than parental meetings with school officials.

It has been shown in many studies that parents' involvement in their children's schooling declines dramatically as students move from the elementary grades through middle school to high school, (Zill and Nord, 1994; Vaden-Kiernan and Davies, 1993; Epstein, 1990) though students continue to want and need the support of their parents (Thompson, 1986). The total body of research on parent participation and the academic achievement of middle school students, although growing, is still relatively small (Ascher, 1991) because most studies have focused on early childhood and elementary school students. More than 90% of parents and 82% of the students, in a study reported by Epstein and Conners (1994), agreed that parent involvement was needed even at the high school level.

This investigation examined not only parent involvement and the academic achievement of middle school or preadolescent students, but also examined the effect of gender of the parent as well as gender of the student. Very little research has explored parent involvement gender effects on preadolescent student academic performance. This study also explored the effects various out-of-school activities had on eighth grade students' academic achievement.

The present research used a theoretical framework that would allow for the examination of multiple influences and outcomes across several domains. Walberg's theory of educational productivity, an expansion of the Carroll (1963) model of academic learning, combines the parameters of instruction and student aptitude of Carroll's model,

and adds the influence of the social environment, which includes the respective environments of the home, classroom, peer influence, and mass media exposure (Haertel, Walberg, Weinstein, 1983). The educational productivity model, posited by Herbert J. Walberg, is relatively comprehensive, theory driven and was developed from a synthesis of over 3,000 microstudies. The nine factors that comprise the productivity model have consistently been shown to increase learning (Walberg, 1990, 1984a). The model provided the framework for the selection of the independent variables used. The model appears in Table I.

Table I

Nine Educational Productivity Factors

Student Aptitude

1) **Ability** or prior achievement, as measured by achievement tests
2) **Development**, as indicated by chronological age or stage of maturation
3) **Motivation** or self-concept, as indicated by personality tests or the student's willingness to persevere on learning tasks

Instruction

4) the **amount** of time students engage in learning
5) the **quality** of the instructional experience including psychological and curricular aspects

Psychological Environments

6) the **"curriculum of the home"**
7) the **milieu** or climate of the classroom social group
8) the **peer group** environment outside school
9) use of **out-of-school time** including the amount of time students spend viewing television

A modification of the nine educational productivity factors was adopted because this study's focus is a parent-home, rather than a student-school orientation. Student aptitude, one of the three major categories, is now parent aptitude, thus the educational productivity factor, ability, or prior achievement was not used. The second educational productivity factor within the student aptitude category, development, as measured by

educational expectations and aspirations for their student, parent-child discussions about school, and parental contact with their child's school.

The second major category, instruction, comprises the two educational productivity factors-quality and quantity. This category and its two educational productivity factors are assessed by the quantity of time students engage in learning instruction outside of school, as well as what type of instruction is experienced outside of school.

Psychological environment, the third major category, includes the following four educational productivity factors: "curriculum of the home", classroom morale, peer group outside of school, and student use of leisure time. The psychological environmental factor scrutinized most closely is the "curriculum of the home". The attitudes and beliefs of the parents about their child's schooling as well as the parent's satisfaction with their child's school. Classroom morale is replaced with school environment (i.e., how the parent feels about their child's school) because this study seeks to explore home/school relationships rather than a specific classroom. Parents' knowledge of their child's peer groups outside of school and of out-of-school activities are also explored. See Table II.

Table II

INDEPENDENT VARIABLES (PRODUCTIVITY FACTORS)

PARENTAL APTITUDE

Motivation

Contact as initiated by parents
Contact as initiated by the school
Parental Expectations / Aspirations
Parent - Child Discussions

INSTRUCTION

Amount of time students engage in learning outside of school

PSYCHOLOGICAL FACTORS

Home Environment
School Environment
Satisfied with School
Knows Peer Group
Television Rules
Out-of-School Activities (each activity was analyzed individually)

This refined productivity model can serve to identify significant alterable parent directed variables that influence a student's achievement. The research includes the students' math and reading test scores as measures of the students' academic achievement, as well as the students' self concept and composite grades.

Parent Selection

One unique element of this study is that it utilized a large scale nation-wide sample of eighth grade students' parents. Although the student constituted the basic unit of analysis in the NELS:88 design, a parent questionnaire was solicited for each student participating in the study, whether they lived in a one or two parent family. Because of the robust response rate of parents (93.7%), NELS:88 provided a unique opportunity to study extensive information about the home life, as well as, family experiences and family influences of a nationally representative sample of eighth-grade students.

Approximately 79% of the respondents were mothers, so an overwhelming rate of responses primarily reflected the mother's perception of involvement. In order to test whether father's or male's involvement elicits a different outcome, the gender of the parents were dummy coded. Male was coded 1 and not male was coded 0.

Methodology

A secondary analysis was employed in this cross sectional study to assess data derived from the first wave of the National Educational Longitudinal Study of 1988 (NELS:88). NELS:88, the third in a series of longitudinal studies sponsored by the National Center for Education Statistics (NCES), is a large-scale, nationwide population sample that includes data from 22,651 parents and 24,599 students.

The parent data contained many variables that were suitable for the educational productivity model and provided a good match. The variables were selected from the list of items sampling primarily parents. The data were analyzed and coded to fit a modified version of the educational productivity model as developed by Walberg. The research included the male and female students' math and reading achievement test scores and composite grades as measures of academic achievement. There existed within the data a very robust sample size of 14,484 cases.

Multiple regression analyses were constructed for the four dependent measures. The educational productivity model was used to define parental involvement in order to test the hypotheses stated below:

1. Parental gender will contribute significantly different factors for male and female eighth grade students' academic achievement.
2. Parental gender will contribute significantly different factors for male and female eighth grade students' composite grades.
3. Parental gender will contribute significantly different factors for male and female eighth grade students' self-concept.

The regression analyses were computed for the entire sample of parents and students by first examining gender data against the four outcomes of math achievement, reading achievement, composite grades and self-concept. Next the data for all respondents were matched to the educational productivity model and entered into the multiple regression equation to determine which variables were significant contributors to student's academic performance and self-concept. For the regression analyses male was coded 1 and not male was coded 0.

Efforts were made to control for extraneous factors that might have significant influence upon the results of the study and might be confused with the effects of the independent variables. Thus, socioeconomic status (SES), ethnicity, urbanicity, geographic region, family composition, eighth grade enrollment, and home language were control variables.

Multiple regression analysis was employed to control for the effects of the independent variables on one another. The regression analyses were computed for the entire sample of parents and students. The fixed variables of a parent gender and a student gender (fathers and sons; fathers and daughters / mothers and sons; mothers and daughters) were entered simultaneously with the alterable variables of parental aptitude, instruction, and psychological environment to determine which variables were significant contributors to students' math and reading achievement and composite grades.

Next, the data for all parental respondents that measured the factors in the educational productivity model were entered into the multiple regression equation to determine which variables were significant contributors to students' academic

performance. Utilizing the backward stepwise elimination procedure, only those variables that were significant at $p<0.05$ were reported. The Statistical Package for the Social Sciences (SPSS) was used to facilitate additional analyses. Internal consistency reliabilities were calculated for composites using SPSS. Any cases with missing data were eliminated resulting in a final sample size.

Findings

The "curriculum of the home", which includes parent-child discussions about school activities, and parents expressing interest in their child's education have been found by Walberg, (1984) and others to be beneficial to student achievement. However, in this study, of the three factors that make up parental aptitude (parental contact with child's school, parental discussions with child, and parental expectations) only parental expectations is consistently significant and positive. A possible explanation for the negative results of the parental discussion variable for student academic achievement outcomes could be that the discussions are of a negative nature. In many schools, parents are contacted only when there is a problem with their child, therefore, another possible explanation may be that parents were reacting, with their discussion and parent-school contact, to their child's poor school performance.

Parents' educational expectations for students who engage in learning activities out-of-school and parents who are satisfied with their children's school have shown consistently positive impact in this study. These findings support Walberg's theory that if a large fraction of a student's time outside of school is spent in learning activities then the effects are academically beneficial. The findings also support other educational productivity studies regarding the positive effects of the alterable curriculum of the home. Another study supports this finding and reports that participation in extracurricular activities reduces risky behaviors in adolescence, such as dropping out of school, becoming a teen parent, using drugs, or engaging in delinquent conduct (Zill, Nord, and Loomis, 1995).

This investigation supports previous research findings, that parents' educational expectations are linked to their children's academic achievement (Seginer 1983). The results of this research show that parental expectations are significant and positive for

all gender pairings (i.e., father-son; father-daughter; mother-son; and mother-daughter) and for all academic criteria.

For each academic performance outcome i.e., reading and math standard scores, and composite grades, a pairing of each gender model was run. In all of the models, parental expectations and out-of-school instruction were found to be significant and positive. These two findings confirm what prior research posits, that expectations and instruction contribute significantly to learning (McPartland and Karweit, 1979). This represents an important finding because both of these factors can be manipulated to produce better results in cognitive outcomes (Connell and Turner, 1995).

Gender Effects

The statistical results also indicated that mothers involvement with their sons and daughters showed a higher percentage of similar significant indicators than those for fathers. For math achievement, nine of the ten regression coefficients (90%) for sons and daughters are statistically significant and in the same direction when paired with mothers. It appears that mothers exhibit very little difference in factors that affect math achievement for sons and daughters. That figure is 80% for reading achievement and 60% for composite grades.

Fathers when paired with sons and daughters contribute a lower percentage of similar significant predictors in each gender model. Only 55% of the significant factors related to math achievement are the same for sons and daughters. This number drops to 40% for reading achievement and is 67% for composite grades.

Gender differences in children's math performance are frequently seen in middle childhood and can be partly attributed to parent expectations (Baker and Entwisle, 1987; Entwisle and Baker, 1983; Parsons, Kaczala, and Meece, 1982). Mothers think their sons will do better in math than their daughters, and this causes sons to see themselves as better in math than daughters, even though the objective evidence (marks and test scores) indicates children of the two sexes are equal in ability. Researchers also found that parents do more to encourage math skills in sons than in daughters.

This research indicates that parent involvement programs should be designed to explore the ways fathers interact with their sons and daughters and the areas of difference in how mothers react to their sons and daughters that relate to academic

performance outcomes. Parents are an untapped resource and their parent-child interactions can be altered to enhance in-school performance.

Results

The results of the four analyses show that different factors contribute to male and female eighth grade achievement and self-concept based upon the gender of the parent. For math achievement, fathers when paired with sons and daughters (Table VIa) produce significant effects in the same direction in the following five areas: parental contact and home environment, which are both negative; parental expectation, parental satisfaction, and out-of-school instruction are all positive factors. A total of fifty-five percent (55%) of the statistically significant predictors are the same and are in the same direction for both models.

A total of four indicators appear in one model but not the other. Father and son discussions have a negative effect on math achievement. Results show that a one point increase of father/son discussions is associated with a decrease of -.82 of a point on the math achievement test. Or conversely, for every one point decrease in father/son discussions, there will be an association of .82 of a point increase on the math achievement test. TV rules have a significantly negative effect on math achievement for daughters when paired with fathers. This variable is not significant for sons when paired with fathers. This finding for daughters supports previous research posited by Williams (et al., 1986) that suggests achievement of girls may be more adversely affected than that of other groups by excessive television viewing. Excessive TV viewing may be the cause of the TV rules imposed by fathers.

Mothers, when paired with sons and daughters (Table VIb) produce only one indicator that is significant and different for math achievement. Sons involvement in Cub Scouts, when all other variables in the reduced model are controlled, is associated with a .50 of a point increase in math achievement. Nine of the ten regression coefficients (90%) for sons and daughters are statistically significant and in the same direction. It appears that mothers exhibit very little difference in factors that affect math achievement for sons and daughters.

Table VII(a) shows the prediction results of the regression analysis for reading achievement for fathers paired with both sons and daughters. Only four of the ten coefficients (40%) are significant and in the same direction for both models. The four are parental contact and home environment, which are both negative and out-of-school instruction and parental expectations, both in a positive direction. There are six (6) regression coefficients that appear in one model but not the other and were significantly related to math achievement. Knowledge of peers is positive and significant for fathers and sons but is not significant for fathers and daughters. The following predictors for reading achievement are significant for fathers and daughters only; parental satisfaction, Brownie Scouts, religious groups, (positive at $p<.01$ significance level), participation in YMCA/YWCA/JCC (negative at $p<.01$ significance level), and 4-H Clubs (positive at $p<.05$ significance level). The results indicate that there are more significant predictor variables related to reading achievement for fathers and daughters than for fathers and sons.

Mothers, paired with sons and daughters (Table VIIb) for the reading achievement outcome, show eight (8) independent indicators that are significant and in the same direction for both models. Sports Teams and Community Groups are significant in a negative direction for the mothers and sons model only. These two predictors are not significant for the mothers and daughters model. This result shows that mothers differentiate little by gender in predictor variables that are related to reading achievement.

The number of significant independent predictors for fathers when paired with sons and daughters for the composite grades (Table VIIIa)outcome is six (6). Four of the six (67%) are significant and in the same direction for both models. Religious groups and sports teams are the two positive predictors for fathers and sons only. For composite grades, this result indicates that fathers exhibit little difference in factors that affect composite grades by gender of student.

Of the 10 significant indicators of composite grades (Table VIIIb) for mothers when paired with sons and daughters, 6 predictors (60%) are the same and in the same direction for both models. The four indicator variables that are significant in only one model are; sons involved in Boy Scouts, mother's knowledge of son's peers (both in a

negative direction), son's involved with religious groups (positive direction) and daughters involved with sports teams.

The regression analysis of self-concept (Table IXa), shows eight (8) significant predictors for fathers when paired with sons and daughters. However, only three (37%) of the eight predictors are the same and in the same direction. Data appears to indicate that fathers exhibit a significant difference in factors that affect self-concept by gender of student. Sixty-seven percent (67%) of the factors are different for sons and daughters.

When mothers are paired with sons and daughters for self-concept(Table IXb), five of the seven significant predictor variables are the same and in the same direction for both models. The data indicates that for mothers, 71% of the predictor variables for self-concept are the same.

Gender of the parent, in this investigation, does show significantly different factors associated with the academic performance outcomes of male and female eighth grade students when fathers are paired with sons and daughters. The data appears to support a stronger relationship between gender and self-concept. The educational productivity model contributed to all four analyses. In some cases previously explained, the regression coefficients for some variables were not as strong or in the anticipated direction. Variance explained in the full model was significant at $p<.001$.

Conclusions

The results of the investigation found that a number of factors drawn from the educational productivity model were significant when other variables were controlled. It also found differences in factors contributed by mothers and fathers to academic performance for male and female eighth grade students. Results in a previous study also found that the extent of fathers' involvement with their children varies by whether the children are boys or girls. It also found that regardless of the child's age, fathers are more likely to be involved with their sons than with their daughters (Marsiglio, 1991; Lamb, 1986; Radin, 1981). However, Sumantri (1983) found that fathers are more effective than mothers, regardless of the gender of the student when achievement was the criteria.

Regression analysis for all respondents identified student gender as a significant factor related to all outcomes. This was also true for parental contact, parental

expectations, out-of-school instruction, and parental satisfaction. In the gender paired models, this investigation found that both parental aptitude and out-of-school instruction, are significant contributors to student achievement as indicated in prior productivity studies (Walberg and Tsai, 1984 and 1985). In all of the models, parent educational expectations for eighth graders, a parental aptitude factor, was significant and positively related to the dependent outcomes. Another factor that was consistently significant and positive in all models was out-of-school instruction.

This investigation is different from other studies of parental involvement because it analyzed the effect parental gender has on out of school factors that contribute to the academic performance of male and female eighth grade students. Results of the study indicate that fathers and mothers contribute significantly different factors to eighth grade male and female students' academic performance. At a time when most parents are in the work force, these findings identified out-of-school, parent directed activities that enhance student achievement. It seems likely that it is not attendance at school activities, per se, that leads directly to positive school outcomes, but rather that such attendance is a marker for other important factors that contribute to children's school success (Zill & Nord, 1994).Such as the fact that students whose parents are involved in their schools, tend to share other activities with their children as well (Nord et.al.,1997).

This study supports the finding that the involvement of fathers, as well as mothers, in their child's school is important for their achievement (Nord, et. al, 1997). The measure of performance did appear to be related to the effects of the gender of the student and which parent had the most involvement with the student. In summary, there are significant differences in factors that mothers and fathers contribute to the academic performance of male and female eighth grade students.

Finally, the findings in this study are generalizable because the research is based on a nation-wide, large scale sample. Implications from the research point to a need for qualitative as well as additional quantitative research on the effect gender of parents plays in contributing factors to their children's academic performance. Additionally, the results of this macrostudy can be used as a guide for further inquiry and action (Tyler, 1984).

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